IN THE CLAIMS

1. (currently amended) A laser for providing a coherent light beam, the laser comprising:

a plurality of laser diodes arranged in an array, wherein each of the plurality of laser diodes is configured to produce one of a plurality of beamlets;

a spatial light modulator (SLM) configured to receive the plurality of beamlets and to adjust the phase of at least one of the plurality of beamlets in response to a control signal;

a detector configured to receive at least a portion of the plurality of beamlets and to produce a feedback signal indicative of the phase of at least one of the plurality of beamlets; ~~and~~

control electronics configured to receive the feedback signal from the detector and to produce the control signal for the spatial light modulator as a function thereof to reduce phase variations across the wavefront of the coherent light beam; and

a gain medium disposed within a lasing cavity and configured to receive the coherent light beam.

2. (Original) The laser of claim 1 further comprising a lens displaced between the array of laser diodes and the spatial light modulator.

3. (Original) The laser of claim 1 further comprising a beamsplitter displaced between the spatial light modulator and the light detector.

4. (Original) The laser of claim 3 wherein the beamsplitter is configured to separate the portion of the plurality of beamlets to the light detector from the coherent light beam.

5. (Original) The laser of claim 1 wherein the light detector comprises an interferometer.

6. (Original) The laser of claim 5 wherein the interferometer is a Michelson interferometer.

7. (Original) The laser of claim 5 wherein the interferometer is a Mach-Zender interferometer.

8. (Original) The laser of claim 1 wherein the spatial light modulator comprises a plurality of pixels.

9. (Original) The laser of claim 8 wherein the control electronics are configured to adjust at least one pixel of the plurality of pixels in the SLM, wherein the at least one pixel corresponds to the at least one of the plurality of beamlets.

10. (Original) The laser of claim 9 wherein the SLM comprises a dual-frequency liquid crystal retarder.

11. (Original) The laser of claim 9 wherein the SLM comprises analog ferroelectrics.

12. (Original) The laser of claim 9 wherein the SLM comprises a plurality of quantum wells.

13. (currently amended) A diode laser for providing a coherent laser beam having a wavefront, the diode laser comprising:

a plurality of laser diodes arranged in an array, wherein each of the plurality of laser diodes is configured to produce one of a plurality of beamlets;

a dual-frequency spatial light modulator (SLM) comprising a plurality of pixels, each pixel corresponding to one of the plurality of laser diodes, wherein the dual-frequency SLM is configured to receive the beamlet from the corresponding laser diode and to adjust the phase of the beamlet in response to a control signal to produce the coherent light beam;

a beam splitter configured to receive the coherent light beam from the dual-frequency spatial light modulator and to extract a sensing portion of the coherent light beam;

a light detector configured to receive the sensing portion and to produce a feedback signal indicative of the phase of at least one of the plurality of beamlets; and

control electronics configured to receive the feedback signal from the light detector and to produce the control signal for the dual-frequency spatial light modulator as a function thereof to produce the coherent light beam with a substantially uniform phase across the wavefront of the coherent light beam; and

a gain medium disposed within a lasing cavity and configured to receive the coherent light beam.

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14. (currently amended) A laser comprising a light source[[,]] and a gain medium ~~and~~ disposed within a lasing cavity, wherein the light source is configured proximate the gain medium to provide a coherent light beam having a wavefront to the gain medium, and wherein the light source comprises:

a plurality of laser diodes arranged in an array, wherein each of the plurality of laser diodes is configured to produce one of a plurality of beamlets;

a spatial light modulator (SLM) configured to receive the plurality of beamlets and to adjust the phase of at least one of the plurality of beamlets in response to a control signal;

a light detector configured to receive at least a portion of the plurality of beamlets and to produce a feedback signal indicative of the phase of at least one of the plurality of beamlets; and

control electronics configured to receive the feedback signal from the light detector and to produce the control signal for the spatial light modulator as a function thereof to produce the coherent light beam with a

substantially uniform phase across the wavefront of the coherent light beam.

15. (currently amended) A method of producing a light beam in a diode laser, the method comprising the steps of:

generating a plurality of beamlets from an array of laser diodes, wherein the plurality of beamlets collectively forms the light beam;

directing the light beam to a spatial light modulator having a plurality of pixels, each pixel corresponding to one of the plurality of beamlets;

monitoring the light beam to identify variations in phase between the plurality of beamlets; ~~and~~

for each of the plurality of beamlets, modulating a local index of refraction in the one of the plurality of pixels in the spatial light modulator corresponding to the beamlet to alter the phase of the beamlet and to thereby reduce the variations in phase between the plurality of beamlets in the light beam <u>and to produce a coherent light beam with a substantially uniform phase across the wavefront of the coherent light beam; and</u>

<u>directing the coherent light beam toward a gain medium disposed within a lasing cavity</u>.

16. (Original) The method of claim 15 wherein the modulating step comprises driving the one of the plurality of pixels at a first frequency to obtain a first index of refraction, and driving the one of the plurality of pixels at a second frequency different from the first frequency to obtain a second index of refraction different from the first index of refraction.

17. (Original) The method of claim 15 wherein the modulating step comprises receiving an indication of the variations in phase between the plurality of beamlets, processing the indication to compute a control signal for the spatial light modulator, and providing the control signal to the spatial light modulator to thereby reduce the variations in phase between the plurality of beamlets.

18. (cancelled)

19. (currently amended) A device for producing a light beam, the device comprising:

means for generating a plurality of beamlets, wherein the plurality of beamlets collectively forms the light beam;

means for directing the light beam to a spatial light modulator having a plurality of pixels, each pixel corresponding to one of the plurality of beamlets;

means for monitoring the light beam to identify variations in phase between the plurality of beamlets; and

means for modulating an individual index of refraction for each of the plurality pixels in the spatial light modulator to alter the phase of the beamlet associated with the pixel to thereby reduce the variations in phase between the plurality of beamlets in the light beam and to produce a coherent light beam with a substantially uniform phase across the wavefront of the coherent light beam; and

means for directing the coherent light beam toward a gain medium disposed within a lasing cavity.

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